

Caring for the Oral Health of Patients Battling Cancer

Part II: Oral Care During Cancer Treatment

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The following is the second of a three-part series addressing various forms of oral health therapy that ideally should be addressed before, during, and after cancer treatment. This segment focuses on oral health care needs during cancer treatment.

A diagnosis of cancer comes with many questions and emotions. “You have cancer.” That one quick sentence made up of just three little words embarks a patient and his or her family on a journey down long roads of uncountable doctor visits, unknown terminology, and unwanted uncertainty. Often, in the midst of this storm, oral health and dental care are overlooked or placed on a back burner - until there is a problem.

Patients actively undergoing cancer treatment present to the dental office with an unique set of medical concerns and potential complications. Immunosuppression, radiation, and cytotoxic drugs can alter the normal healing process expected after dental procedures. The dental practitioner committed to seeing patients at this most vulnerable time must have a clear understanding of the systemic effects of cancer treatments, be willing to communicate effectively with other members of the oncology team, and realize if the necessary care is within the scope of his or her proficiency. Still, there is much that the dentist or hygienist can do to improve the health and increase the quality of life of patients with cancer.

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Because a *pre-treatment* oral assessment can not be completed after treatment has begun, patients presenting in the dental office for the first time who are currently undergoing cancer therapy must be evaluated in light of the cancer care regimen they are receiving. Each therapy has its unique side effects and concerns; but in virtually all

cases, the patient undergoing cancer treatment is immunosuppressed. The dental professional caring for these patients must always keep this fact in mind and design the patient's treatment plan accordingly.

DENTAL CARE DURING CHEMOTHERAPY

The *ideal* time for oral care is before chemotherapy begins; however it is not always possible to seek the services of a dental professional before cancer treatment has commenced. Chemotherapy is given in cycles. A cytotoxic drug or combination of drugs is administered - usually through a surgically-placed venous port - and then the patient undergoes a time of recovery. This process, known as the chemotherapy cycle, is repeated according to the needs of the patient and the nature of the cancer. Unfortunately, chemotherapy is often toxic to normal cells; so during treatment with chemotherapeutic agents, the patient is often very ill. The number of peripheral white blood cells drops dramatically after receiving chemotherapy, placing the patient at an increased risk of infection. Similarly, the platelet count decreases and bleeding issues must be taken into account. The lowest point of this cyclical rise and fall of cell counts is known as the patient's *nadir*. It is at this point that the patient is most at risk of infection, septicemia, and bleeding. The nadir occurs approximately 10-14 days after the infusion of chemotherapeutic drugs. If dental work is required during chemotherapy it is imperative that the dental professional know the cycle of the regimen, review *current* blood work, consult directly with the medical oncologist, and document the findings before proceeding with care. Treatment should be delayed until the patient's absolute neutrophil count and platelet count have recovered.

As a general rule, the absolute neutrophil count (ANC) should be equal to or greater than $1,000/\text{mm}^3$. Patients with ANC's between $1,000/\text{mm}^3$ and $2,000/\text{mm}^3$ should receive antibiotic prophylaxis according to the American Heart Association's recommendation. Platelet count should be equal to or greater than $75,000/\text{mm}^3$. Clotting factors (PT, PTT, fibrinogen) should be normal. Any invasive dental procedures, such as oral surgery, should be avoided if the ANC is expected to drop below $1,000/\text{mm}^3$ within two weeks of the procedure.

DENTAL CARE DURING HEAD AND NECK RADIATION

Dental care during head and neck radiation most often focuses on treating and managing the side effects associated with the radiation. The dental professional seeing head and neck radiation patients during treatment must have a thorough understanding of oral infection treatment, pain management and oral pathology. Conditions not usually encountered in routine patient care are experienced frequently in this population of patients. Although necessary for the treatment of the cancer, radiation wreaks havoc on the oral mucosa, salivary glands, teeth, bone, and perioral structures.

Virtually all head and neck radiation patients will experience oral mucositis at least once in their fight with cancer. (Mucositis is also widely seen in patients undergoing hematopoietic cell transplants and very cytotoxic chemotherapy.) Oral mucositis is the inflammation and ulceration of the mucosal lining of the mouth and pharynx, although mucositis can take place anywhere along the GI tract. The affected tissue becomes thin and ulcerated, and can subsequently succumb to necrosis. The resulting lesions are often very painful and debilitating and can affect eating, drinking, and speaking. Mucositis lesions can even become so severe that the patient's scheduled cancer treatments may be interrupted. In addition to diminishing quality of life, these intraoral sores may serve as portals into the blood for bacterial, viral, or fungal infections. The dental professional must be diligent to identify infections during this time of increased susceptibility and aggressively treat outbreaks systemically. Dentists should be aware that Candidal infections are common in head and neck radiation patients and treat the mouth and any dental prostheses accordingly. Pain should be managed with topical anesthetics or systemic pain medication. If the choice is made to use topically applied anesthetics, it should be stressed to the patient to guard against further damage to the tissue by self-biting.

Severe xerostomia, or dry mouth, is a major concern for all cancer treatments, but especially head and neck radiation patients when the salivary glands are directly exposed to measured amounts of ionizing radiation. Diminished flow has been reported with doses as low as 10 Gy and permanent hyposalivation at doses greater than 25 Gy. Loss of salivary function can lead to changes in taste, difficulty chewing and/or swallowing, nutritional compromises, intolerance to oral medications, increased intraoral mucosal injury, inability to wear dental prostheses, and rampant dental caries. Beyond

these side effects, severe xerostomia greatly diminishes the patient's quality of life. It can be the cause of irregular sleep habits, as many patients wake up often during a night's sleep because of dryness of the mouth. Xerostomia can give rise to halitosis, which can affect social interaction and self-confidence. Ultimately, chronic dry mouth can prompt emotional challenges and even depression due to changes in social and physical well-being.

There are several products to manage dry mouth on the market today ranging from rinses to systemic sialogogues. Systemic medication should be considered only when residual salivary function remains. Gum, mints, and sprays are also included in the line-up of defense against dry mouth. One new promising product available is AO ProVantage, an antioxidant gel produced by PerioSciences, LLC, which has been shown to be effective on xerostomia and to promote intraoral healing through the reduction of reactive oxygen species in the mouth.

During head and neck radiation therapy, the patient should be reminded that eating will be more difficult. Some patients may even require a feeding tube. For those who can manage to eat on their own, the dental professional should recommend a non-cariogenic diet. Patients should be reminded not to use sugar-based drinks, lozenges or candies to repeatedly moisten the mouth. Patient education regarding the effects that head and neck radiation will have on their saliva and teeth should be reinforced throughout care. For patients who have elected to keep their teeth, they must understand that head and neck radiation places them at an increased risk for dental caries, and they must commit to a lifetime of meticulous oral hygiene. Such a regimen includes the continue use of fluoride trays for those patients who experience permanent hyposalivation.

Trismus is another unwanted side effect experienced by many patients undergoing head and neck radiation. Every effort should be made to maintain the patient's vertical dimension of opening throughout treatment. An inexpensive effective way to increase vertical dimension is to use wooden tongue depressors taped together, gradually adding another depressor until desired opening is achieved. Daily exercise of opening and closing should be required with warm moist heat applied before and after the workout. Anti-inflammatory drugs and/or muscle relaxers can be prescribed as needed.

ORAL HYGIENE DURING CANCER CARE

Patients undergoing treatment for cancer should maintain the fullest oral hygiene regimen possible. A soft or extra soft toothbrush should be used with a fluoride toothpaste, if the toothpaste can be tolerated. Alternatively, a sponge brush dipped in aqueous chlorhexidine gluconate may aid in plaque removal, or a washcloth damp with warm water may also be to clean the teeth during periods when a toothbrush is too abrasive to the intraoral tissues. Some patients may only be able to bear rinsing with warm water or saline. While rinsing is better than nothing, brushing should resume as soon as the patient can accept it. Again, the goal is to remove plaque and debris and keep the intraoral bacterial count as low as possible during times of immunosuppression.

Some patients may be able to floss during cancer treatment using a waxed floss or dental tape. It should be stressed, however, that care must be taken to not damage tissue and create a conduit for bacteria to enter the bloodstream. This is particularly important when the mouth is severely dry or in times of a known intraoral infection.

As mentioned before, patients should expect some degree of dry mouth during the course of their treatment. Fluoride trays should be fabricated for each patient, or at a minimum, a 5,000 ppm fluoride toothpaste prescribed for daily use. 1-1.1% neutral sodium fluoride is the fluoride of choice as it does not etch porcelain and glass ionomer restorations. The patient should place of thin ribbon of fluoride gel in the tray and seat the tray on the teeth, gently bite several times to distribute the gel between the teeth, and leave the tray in place for 5 to 10 minutes. The trays should then be removed and the patient instructed to spit but not rinse, eat or brush for at least 30 minutes.

Patients should not wear a dental prosthesis during chemotherapy or head and neck radiation. If the denture must be worn, it should be for as little time as possible. Patients should be encouraged to remove the denture at night to give intraoral tissues a rest. Likewise, wearing of appliances should be avoided if mouth sores are present. Patients should clean the denture at least twice a day, making sure to rinse all visible debris off the prosthesis. For decontamination, the denture can be soaked daily in a 1:25 dilution of bleach water, aqueous chlorhexidine, or a commercially available denture cleaner for 30 minutes

THE BENEFITS OF RINSING

Many patients find frequent rinsing soothing. Rinsing has many benefits including cleaning and lubricating the tissues in the mouth, preventing crusting, aiding in the care of mucosal wounds, hydrating and irrigating the mucosal tissues, soothing sore gums and oral mucosa, and removing debris. It should be noted, however, that rinsing should not be a substitution for brushing and/or flossing when brushing or flossing can be tolerated.

Some of the best everyday rinses can be made from ingredients commonly found in the pantry. For a neutral rinse, add 1/4 teaspoon salt and 1/4 teaspoon baking soda to one quart of water. This rinse can be used every two hours to help remove debris, soothe irritated tissue, and dissolve thick mucous secretions. In the presence of mucositis or other mouth sores, the salt can be substituted with baking soda, making the recipe 1/2 teaspoon baking soda to one quart of water. For a saline rinse, add 1/2 teaspoon salt to an 8 oz. glass of water. The saline rinse helps reduce mucosal irritation, removes thickened secretions and debris, and is the recommended treatment for leukemic gingivitis.

Often times, the need for a specialty rinse may arise. Sunstar Americas, Inc. makes an alcohol-free version of chlorhexidine gluconate 0.12% that is extremely beneficial since the majority of patients undergoing cancer treatment experience dry mouth and alcohol-containing products are contraindicated. Aqueous chlorhexidine has broad-spectrum antimicrobial activity and can be used whenever reduction of intraoral bacteria is essential. Caphasol® (EUSA Pharma) is a two-part supersaturated calcium phosphate rinse that is mixed by the patient immediately before use. It has been shown to be effective in removing thick mucosal secretions and as an aid for treating oral mucositis and xerostomia. A new product, AO ProRinse by PerioSciences, LLC, is an alcohol-free antioxidant-containing mouth rinse that has shown promise in eliminating the metallic taste that many patients experience while undergoing chemotherapy.

Patients should be reminded that the instructions for all rinses is “swish and spit”. Even rinses made at home should not be ingested. Caution should be taken for hypertensive patients or patients on a sodium-restrictive diet when recommending salt-based rinses, including Caphasol® .

THE ROLE OF THE DENTAL PROFESSIONAL IN CANCER CARE

Making a difference in the life of a cancer patient can be extremely rewarding. A dental professional knowledgeable in cancer care should be a member of every oncology team. Understanding the unique needs of patients undergoing cancer therapy and keeping them safe during times of immunosuppression are critically important. Forecasting statistics show an expected increase in the incidence of cancer in the United States each year. Unfortunately, more and more people will hear those three little words, “*You have cancer,*” and their lives will be changed. These are patients that need the skills of an *oral health* professional who can understand the medical history, read the lab results, consult with the oncologists, diagnose the oral condition, treat the problem, and *care*. These are the patients that need you.

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Dr. Abbott has most recently conducted studies focusing on bisphosphonate-related osteonecrosis of the jaw and xerostomia in patients with cancer. He is the previous recipient of the Dentist Scientist Award and the National Research Service Award, both granted by the National Institutes of Health. Dr. Abbott has been a visiting faculty lecturer for the University at Buffalo School of Dental Medicine continuing education program and has lectured throughout the United States.